

W. A. NISUN.

BOILER.

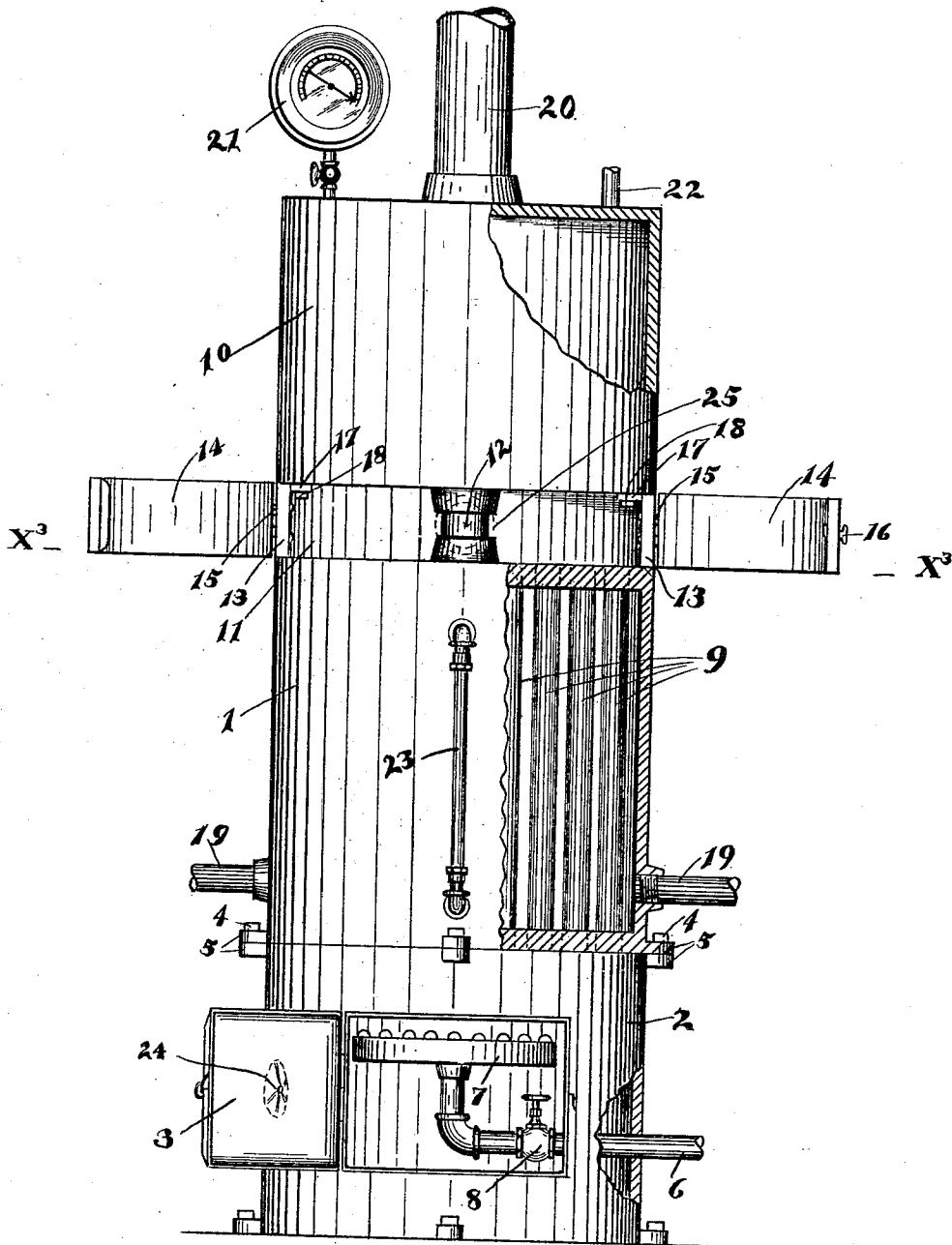
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936,023.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 1.

Fig 1.



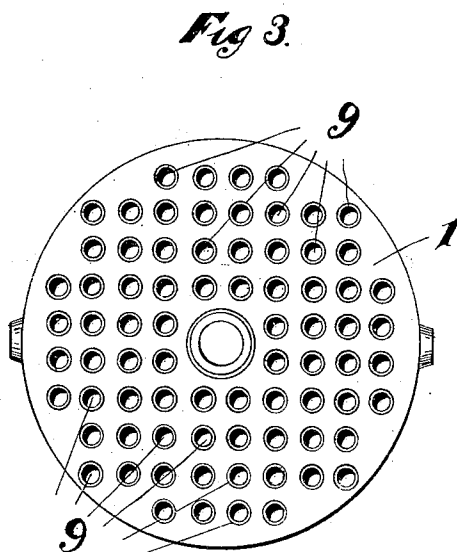
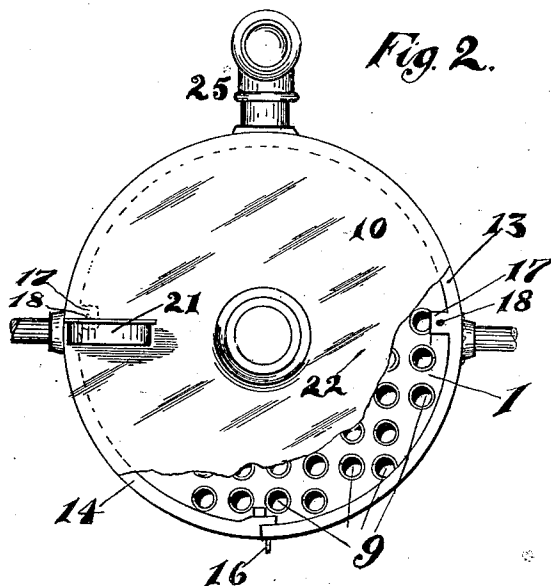
Witnesses
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WALTER A. NISUN, OF MINNEAPOLIS, MINNESOTA.

BOILER.

936,023.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALTER A. NISUN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its especial object to provide an improved hot water or steam heating boiler equipped with a gas or oil burner; and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claim.

The improved boiler is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view partly in side elevation and partly in section, some parts being broken away, showing the improved boiler. Fig. 2 is a plan view of the parts shown in Fig. 1; and Fig. 3 is a plan view of the boiler with all parts above the horizontal line marked x^3 x^3 removed.

The improved boiler is preferably round in cross section, although it may be square or of other angular form. The body 1 of the boiler proper is rigidly but detachably secured to a base shell 2 which has a hinged door 3 and serves as the primary combustion chamber. As shown, the detachable connection between the said parts 1 and 2 is made by short, nutted bolts 4 passed through projecting lugs 5, of said parts. A pipe 6 for the supply of the gas or oil extends into the combustion chamber 2 and is provided with a burner 7 and a valve 8, both located within said combustion chamber. Upright flues 9 extend vertically through the boiler body 1 and their open ends are cast into the top and bottom plates or heads of the said boiler body.

A dome 10, the cross section of which corresponds to that of the body section 1, is located directly over the latter but spaced apart therefrom to form the secondary combustion chamber 11. The bottom plate of the dome 10 is centrally connected to the top plate of the boiler body 1, by a short water circulating pipe 12. The secondary combus-

tion chamber 11, at its sides, is inclosed by a semi-cylindrical flange 13 and by quadrants 14, which latter are connected to the former by hinges 15 and are normally secured, at their free ends, by a screw 16. The flange section 13 is provided with internal lugs 17 which, by screws 18, are rigidly clamped to the bottom of the dome 10, so that said flange is detachably secured to said dome. The said flange is clamped against the top of the boiler section 1 by screwing the pipe 12 into the hubs of the said dome and boiler section. The quadrants 14, when opened up, afford access to the secondary chamber 11, for the purpose of cleaning the same whenever this may be found necessary or desirable. As shown, several cold water return pipes 19 open into the bottom portion of the boiler body 1, and a hot water or steam outlet pipe 20 leads upward from the central portion of the dome 10.

The numeral 21 indicates a pressure gage which is connected to the top of the dome 10, and the numeral 22 indicates a pipe which extends from the top of the dome and to which an ordinary safety valve (not shown) will in practice usually be attached.

The numeral 23 indicates a water gage which is connected to the boiler body 1.

The numeral 24 indicates a damper applied in the door 3 and by means of which the amount of air supplied to the combustion chamber may be regulated.

The flame from the burner 7, as is evident, will first strike against the bottom of the boiler section 1, and from thence will pass upward through the flues 9 into the secondary combustion chamber 11, where the said flame will be brought into direct contact both with the bottom of the dome 10 and with the top of the said boiler section 1. This, as is evident, gives a large amount of surface and contact both with the flame and with the water. The products of combustion are drawn off from the secondary combustion chamber 11 through a pipe or flue 25, which, as shown, extends outward through the flange 13 and thence upward. When the boiler is used to generate steam the water will be maintained in the boiler body 1, some little distance below the top thereof, so that the steam generated will escape into the dome 10, where it will be super-heated by the action of the flame in the secondary combustion chamber 11. When the boiler is used as a hot water

heater the dome 10, as well as the boiler body 1, will, of course, be filled with water; and in this case the hot water which passes upward into said dome will be heated to
5 still higher temperature by the action of the flame in the said secondary combustion chamber 11.

One of the principal features of this invention consists in the boiler body having
10 integrally cast sides and head or flue sheets and having flues, the ends of which are cast into the said head or flue sheets in the process of construction of said boiler body. This not only gives cheap construction but gives
15 highly efficient, strong and durable construction, in which the flues will not become loose in their seats. Preferably the said flues 9, in a boiler designed for heating purposes, would be of rolled steel; but for some
20 other purposes, such, for instance, as for automobile use, the flues would usually be of copper.

In some cases the boiler might be provided with a grate adapting the same to
25 burn coke or coal.

In actual practice the efficiency of the

boiler above described has been demonstrated.

What I claim is:

In a boiler, the combination with a cylindrical primary combustion chamber, of a
30 cylindrical boiler body resting on and extending upward from said primary combustion chamber, a cylindrical dome extending upward from said boiler body but spaced
35 apart therefrom to form a secondary combustion chamber, a multiplicity of flues located within said boiler body and all extending from said primary combustion
40 chamber to said secondary combustion chamber, a centrally located water connection between said boiler body and dome and water circulating pipes, one extended axially upward from said dome and the other opening
45 into the lower portion of said boiler body, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER A. NISUN.

Witnesses:

HARRY D. KILGORE,
F. D. MERCHANT.